OWNER: National Park Service (Lewis Mt. #1) VDMR #1072
DRILLER: Frank W. Martin WWCR #84
COUNTY: Page TOTAL DEPTH: 300'

GEOLOGIC LOG

Swift Run Formation (0-145')

0-5	Semischist (weathered) — buff, slightly pink; fine-grained, foliated; sericite matrix containing 50% rounded to subangular and lens-shaped grains of quartz, (medium-sand to granules); kaolin, iron oxides.
5-10	As above — no pink, slightly green.
10-15	As above.
15-20	As above — less weathered; abundant fine-grained ilmenite-magnetite; sericitization of quartz, minor plagioclase, trace zircon.
20-25	As above.
25-30	As above.
30-35	As above.
35-40	Quartz Semischist — pale-gray to green; fine-grained matrix of sericite and chlorite containing abundant grains of subangular to lens-shaped quartz (medium sand to granules); less sericitization of quartz, presence of epidote, minor magnetite.
40-45	As above — more magnetite.
45-50	As above — minor pink quartz and feldspar; saussuritized albite, knots of dark chlorite.
50-55	Quartz Semischist — pale-green to pale-pink; fine-grained matrix of sericite and chlorite; slightly foliated; abundant rounded to lens-shaped quartz grains (0.5 to 4 mm) platy matrix curves around quartz; quartzitic in part.
55-60	As above — largest quartz grain 2 mm; more matrix and with epidote; no pink; not quartzitic.
60-65	As above.
65-70	As above.
70-75	As above — light greenish-gray.

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75-80	Quartz Semischist — pale-green to gray; fine-grained matrix of sericite, chlorite and epidote; slightly foliated; rounded lens-shaped quartz grains (to 2 mm); platy matrix curves around quartz.
80-85	As above — minor pink.
85-90	As above — no pink.
90-95	As above — better foliation; vein quartz.
95-100	Quartz Semischist — pale-green to pale-purple; fine-grained matrix of sericite, chlorite, and epidote containing abundant rounded to lens-shaped quartz (0.5-3 mm); quartzitic in part.
100-105	As above.
105-110	Quartz Semischist — light greenish-gray, fine-grained, sericite-chlorite matrix with epidote and ilmenite; slightly fissile; abundant grains of subrounded to lens-shaped quartz (medium- to coarse-sand sized); vein quartz.
110-115	As above — more epidote.
115-120	As above — less quartz; occasional granule sized grain; more foliation.
120-125	As above — more quartz; coarser grains; bedding apparent.
125-130	Epidote-Quartz Semischist — interbedded pale-green and red-brown; quartz, epidote, minor chlorite and feldspar; vein of quartz; minor chlorite schist; trace of chrysocolla; hard and quartzitic.
130-135	Metamorphosed Sandstone — pale-green to pale-pink; granule to silt size sand grains in a matrix of sericite and epidote; bedding apparent; grains are rounded not lens shaped; vein quartz.
135-140	As above — matrix finer, little adsorption of quartz by sericite, grain outlines more visible; more vein quartz.
140-145	Quartz Semischist — pale-green to gray; medium sand to granule sized quartz with sericite epidote cement; arkosic; quartzitic; minor metamorphosed siltstone; vein quartz.

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Catoctin and Swift Run formations (145-300')

145-150	Greenschist — dark-green, fine-grained, foliated; chlorite, epidote, quartz; vein quartz with minor tremolite asbestos; minor quartz semischist as above.
150-155	Greenschist, Quartz Semischist, and Epidosite — greenschist and quartz semischist as above; epidosite is pale yellow-green, fine-grained, hard, quartzitic; epidote, quartz; minor feldspar, sericite.
155-160	Quartz Semischist — pale-pink to light-green; coarse sand and granules of quartz and feldspar cemented with epidote, sericite, minor chlorite; quartz vein; some of the detrital grains are lens shaped.
160-165	Semischist and Greenschist — 50% semischist; feldspathic sand (medium size) cemented with epidote and chlorite; 50% greenschist: very-dark-green, fine-grained; chlorite, epidote, sericite; foliated, occasional grain of sand.
165-170	Greenschist — dark-green, fine-grained, foliated; chlorite, sericite, epidote; minor greenstone with tiny spots of red hematite (X-ray analysis: chlorite, epidote, amphibole, minor plagioclase, and quartz).
170-175	Greenstone — gray-green, fine-grained; slightly foliated; chlorite, epidote, sericite, tiny spots of hematite.
175-180	Quartz Semischist — green-gray, fine-grained; sericite-chlorite-epidote matrix with abundant sand and granules of quartz, minor feldspar; quartzitic in part.
180-185	Greenschist — medium-gray, fine-grained, foliated; thin section: curved plates of chlorite, minor needles of actinolite, anhedral epidote, streaks of dusty opagues.
185-190	Greenschist — with vein epidote.
190-195	As above.
195-200	As above — less green; grayer.
200-205	As above.
205-210	Metamorphosed Sandstone and Siltstone — pale-green, salmon-pink, white, subangular to rounded coarse sand and granules interbedded with very-fine pink sand and silt; both cemented with epidote and sericite; quartzitic in part vein quartz, plagioclase.

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210-215 Metamorphosed Sandstone and Siltstone — pale-green, salmon-pink, white and red-brown, subangular to rounded coarse sand and granules interbedded with very-fine pink sand and silt; both cemented with epidote and sericite; quartzitic in part vein quartz, plagioclase.

215-220 Greenschist — greenish-gray, fine-grained, foliated; chlorite, epidote, sericite, quartz, vein quartz; minor red-brown metamorphosed siltstone as above.

220-225 Greenschist — greenish-gray, fine-grained; minor foliated; chlorite, epidote, sericite, quartz, vein quartz; actinolite, minor vein calcite.

225-230 Greenstone — greenish-gray, fine-grained; (thin section: fine-grained chlorite, actinolite, epidote, many hematite and epidote pseudomorphs after mafic minerals, small amygdules filled with epidote and chlorite).

230-235 As above.

235-240 As above.

240-245 As above — vein of calcite and epidote.

245-250 Greenstone — blue-gray, fine-grained; slightly foliated; chlorite, epidote, sericite, amphibole, tiny red hematite spots.

250-255 As above — medium-dark-gray.

255-260 As above — epidote streaks; thin section shows tiny red spots to be hematite, outline of mafic minerals now completely replaced by albite and chlorite.

260-265 Greenschist — dark-green to light-green, fine-grained, foliated; chlorite, sericite, amphibole.

265-270 Greenstone — dark-green to gray, fine-grained; chlorite, epidote, amphibole; minor yellow-green epidote-quartz rock (see below).

270-275 Epidote Greenstone — yellow-green to gray, fine-grained; epidote, quartz, plagioclase, amphibole, chlorite.

275-280 Greenstone — greenish-gray, fine-grained; chlorite, epidote, amphibole; tiny hematite spots; 30% sample is epidote greenstone as above.

280-285 Epidote Greenstone — yellow-green to gray-green; fine-grained; epidote, quartz, amphibole, chlorite, tiny red hematite spots; vein quartz with asbestos; presence of calcite.

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285-290 Greenstone — gray-green, fine-grained; chlorite, sericite, amphibole, magnetite, epidote, plagioclase; tiny spots hematite; minor epidote rock as above.

290-295 Greenstone — gray-green, fine-grained; chlorite, sericite, amphibole, magnetite, epidote, plagioclase; tiny spots hematite; minor epidote rock as above, slightly foliated.

295-300 Epidote Greenstone — yellow-green, fine-grained, epidote, quartz, plagioclase; tiny spots hematite; vein quartz and calcite; 30% gray greenstone as above.

GEOLOGIC SUMMARY

Greenstone and Greenschists are not necessarily metamorphosed basalts but may be metamorphosed tuffs, volcanic muds and/or pyroclastics. The drill hole is located on or very near the locally vertical Swift-Run-Catoctin contact in a cross-faulted area.

	ROCK UNIT	TIME ROCK UNIT
0-145	Swift Run Formation	Precambrian
145-300	Swift Run and Catoctin formations	Precambrian

Virginia Division of Mineral Resources
Hollis N. Walker, Geologist
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